FluWatch

Public Health Agency of Canada | Agence de la santé publique du Canada

March 3 to March 9, 2013 (Week 10)

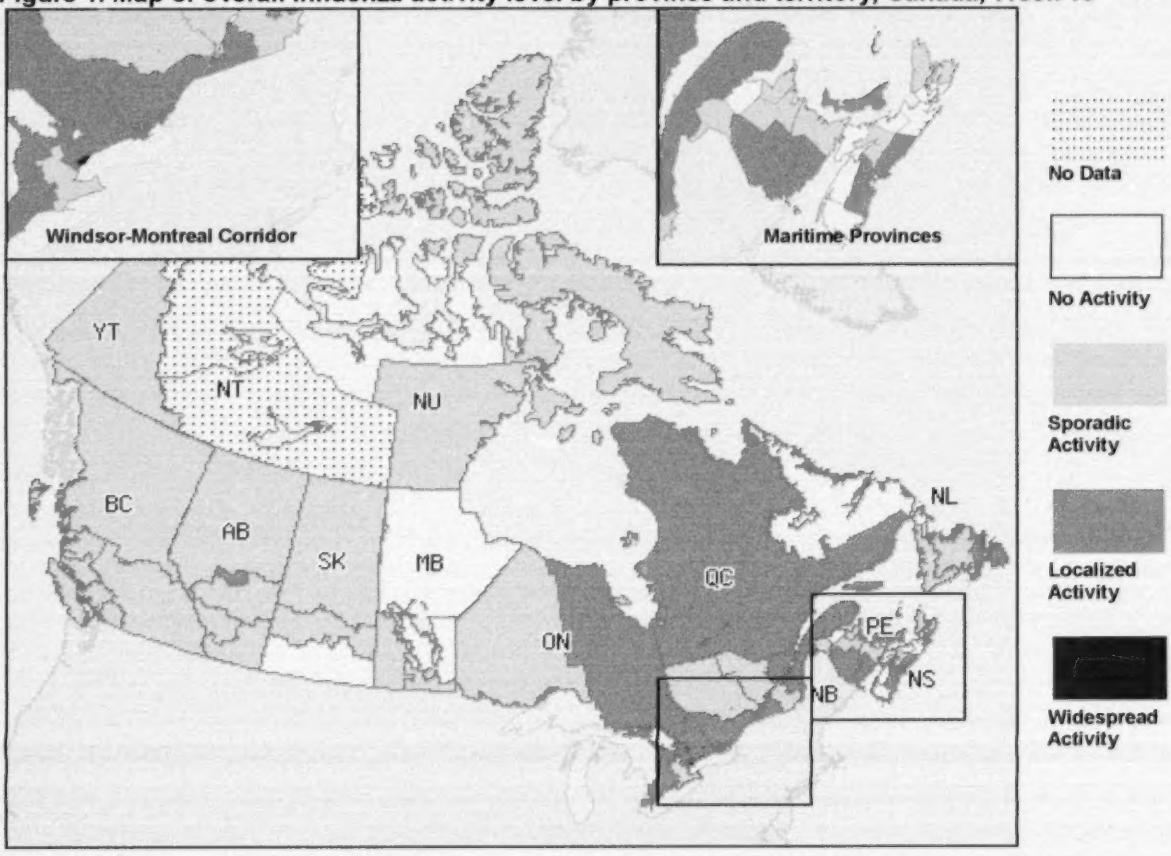
Overall Summary

- Overall detections of influenza continued to decline, however the proportion of influenza B detections increased.
- In week 10, 75% of paediatric hospitalizations were associated with influenza B.
- Nationally, the number of regions reporting widespread or localized activity decreased.
- The ILI consultation rate increased but was within the expected range for this time of year.

Influenza Activity (geographic spread) and Outbreaks

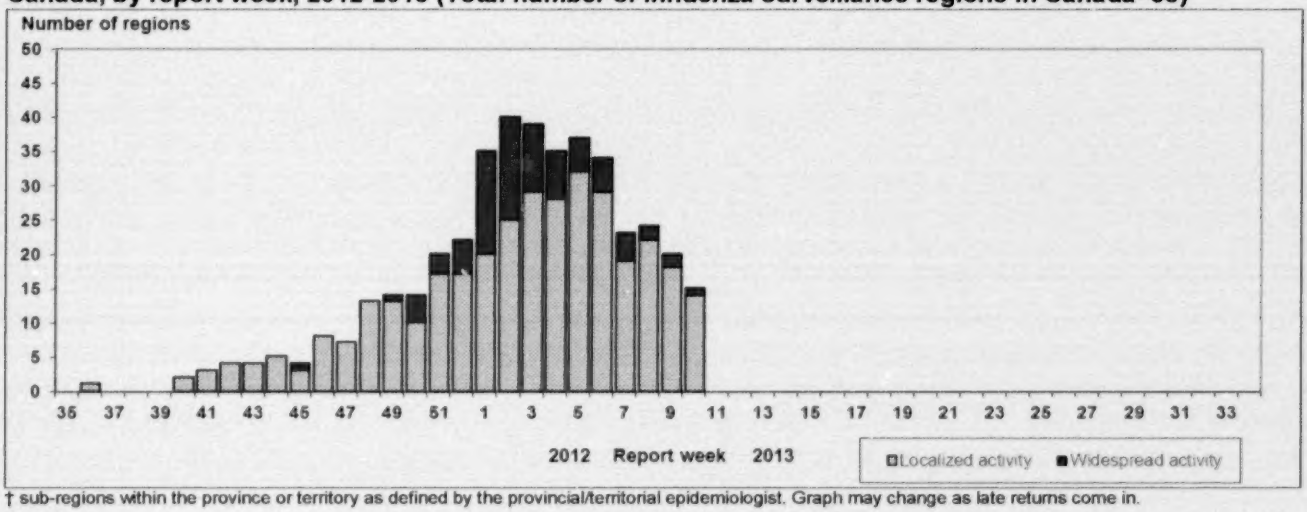
In week 10, one region [in ON] reported widespread activity and 14 regions [in AB(1), ON(4), QC(3), NB(2), NS(2), PE(1) and NL(1)] reported localized activity. The number of regions reporting widespread or localized activity decreased compared to the previous week and continued to follow the overall decline in influenza/ILI activity from the peak in early January (Figures 1 and 2). Twenty-three new influenza outbreaks were reported: 19 in long-term-care facilities, 1 in a hospital, and 3 in other facilities or communities (Figure 3).

Figure 1. Map of overall Influenza activity level by province and territory, Canada, Week 10



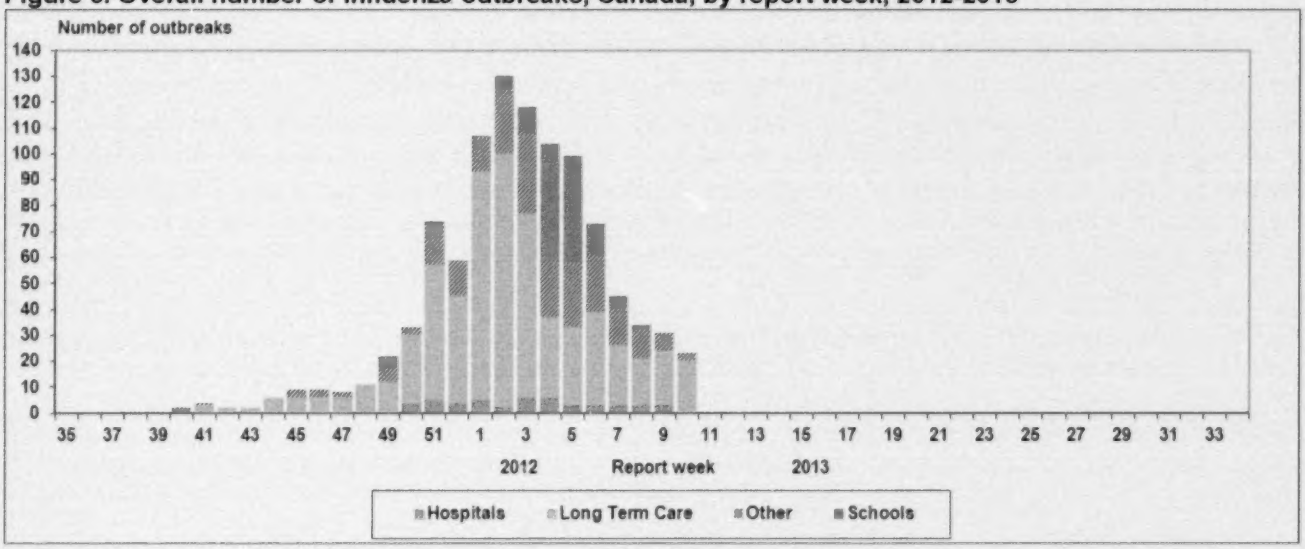
Note: Influenza activity levels, as represented on this map, are assigned and reported by Provincial and Territorial Ministries of Health, based on laboratory confirmations, sentinel ILI rates (see graphs and tables) and reported outbreaks. Please refer to detailed definitions on the last page. For areas where no data is reported, late reports from these provinces and territories will appear on the FluWatch website.

Figure 2. Number of influenza surveillance regions† reporting widespread or localized influenza activity, Canada, by report week, 2012-2013 (Total number of influenza surveillance regions in Canada=58)



† sub-regions within the province or territory as defined by the provincial/territorial epidemiologist. Graph may change as late returns come in.

Figure 3. Overall number of influenza outbreaks, Canada, by report week, 2012-2013



Influenza and Other Respiratory Virus Detections

The percentage of positive influenza tests decreased from 14.6% in week 09 to 13.5% in week 10 (Figure 4). Among the influenza viruses detected in week 10 (n=616), 55.7% were positive for influenza A viruses [of which 26.5% were A(H3), 20.4% were A(H1N1)pdm09, and 53.1% were A(unsubtyped)] (Table 1). The proportion of influenza B detections has increased over the past 7 weeks from 2.1% in week 03 to 44.3% in week 10 (Figure 4). The proportion of A(H1N1)pdm09 among positive influenza A detections has increased from 1.0% in week 52 to 20.4% in week 10. Cumulative influenza virus detections by type/subtype to date are as follows: 94.0% influenza A [35.0% A(H3), 3.8% A(H1N1)pdm09 and 61.2% A(unsubtyped)] and 6.0% influenza B (Table 1).

Detailed information on age and type/subtype has been received for 21,007 cases to date this season (Table 2). The proportion of cases by age group is as follows: 13.5% < 5 years; 8.6% between 5-19 years; 15.4% between 20-44 years; 16.8% between 45-64 years of age; 45.7% ≥ 65 years.

The percentage of tests positive decreased slightly for RSV, from 18.1% in week 09 to 17.3% in week 10; and increased for both parainfluenza (3.4%) and hMPV (4.8%). The percentage of tests positive for rhinovirus (8.7%), coronavirus (3.6%) and adenovirus (1.5%) were similar to previous weeks (Figure 5)*.

* For more details, see the weekly Respiratory Virus Detections in Canada Report.

Table 1. Weekly and Cumulative numbers of positive influenza specimens by Provincial Laboratories, Canada, 2012-2013

Reporting provinces	Weekly (March 3 to March 9, 2013)						Cumulative (August 26, 2012 to March 9, 2013)					
	Influenza A					B	Influenza A					B
	A Total	A(H1)	A(H3)	Pand H1N1	A (UnS)*	Total	A Total	A(H1)	A(H3)	Pand H1N1	A (UnS)*	Total
BC	30	0	13	8	9	23	1846	0	1420	185	241	272
AB	24	0	8	13	3	40	2254	0	1733	377	144	322
SK	22	0	1	17	4	9	793	0	468	51	274	113
MB	13	0	0	2	11	3	604	0	78	8	518	47
ON	87	0	30	19	38	35	7990	0	3720	276	3994	324
QC	57	0	1	3	53	157	9629	0	547	29	9053	576
NB	74	0	34	8	32	4	1795	0	757	50	988	9
NS	24	0	0	0	24	0	312	0	165	5	142	3
PE	4	0	4	0	0	0	101	0	70	3	28	1
NL	8	0	0	0	8	2	696	0	152	0	544	7
Canada	**343**	**0**	**91**	**70**	**182**	**273**	**26020**	**0**	**9110**	**984**	**15926**	**1674**

*Unsubtyped: The specimen was typed as influenza A, but no result for subtyping was available. Specimens from NT, YT, and NU are sent to reference laboratories in other provinces. Note: Weekly data is based on week of positive lab detection. Cumulative data includes updates to previous weeks; due to reporting delays, the sum of weekly report totals do not add up to cumulative totals.

Table 2. Weekly & Cumulative numbers of positive influenza specimens by age groups reported through case-based laboratory reporting, Canada, 2012-2013*

Age groups	Weekly (March 3 to March 9, 2013)					Cumulative (Aug. 26, 2012 to March 9, 2013)				
	Influenza A				B	Influenza A				B
	A Total	Pandemic H1N1	A/H3N2	A unsubtyped	Total	A Total	Pandemic H1N1	A/H3N2	A unsubtyped	Total
<5	17	3	1	13	43	2556	168	841	1547	274
5-19	5	0	1	5	59	1411	59	627	725	399
20-44	36	10	6	20	32	3007	267	1176	1564	236
45-64	22	10	1	11	31	3310	250	1180	1880	214
65+	54	6	14	34	39	9347	91	3542	5714	253
Unknown	0	0	0	0	0	164	18	144	2	0
Total	**135**	**29**	**23**	**83**	**204**	**19795**	**853**	**7510**	**11432**	**1376**

*Please note that this table reflects the number of specimens for which demographic information was reported. These represent a subset of all positive influenza cases reported. Delays in the reporting of data may cause data to change retrospectively.

Figure 4. Influenza tests reported and percentage of tests positive, Canada, by report week, 2012-2013

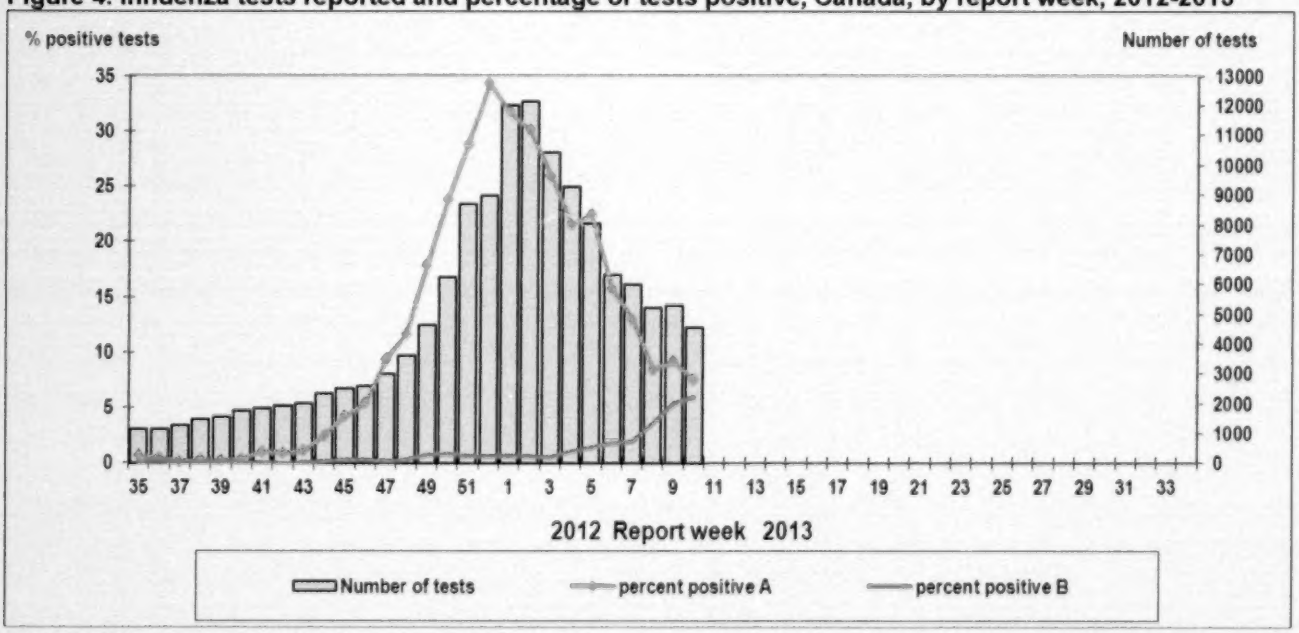
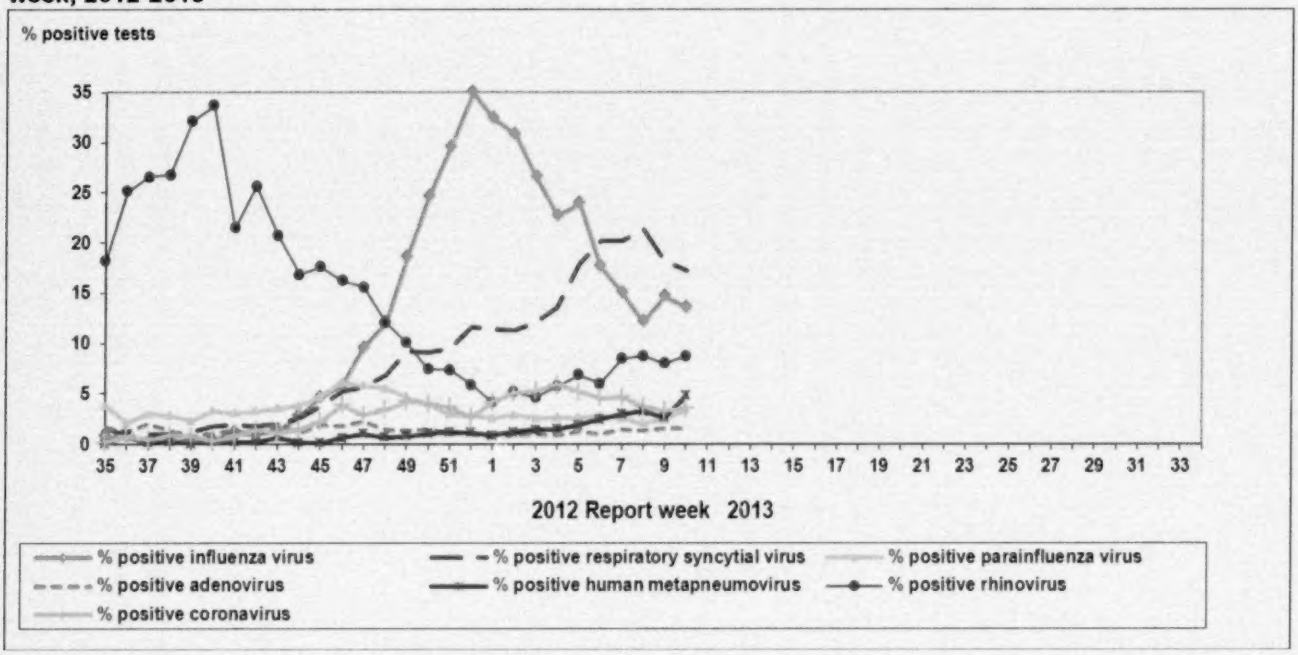


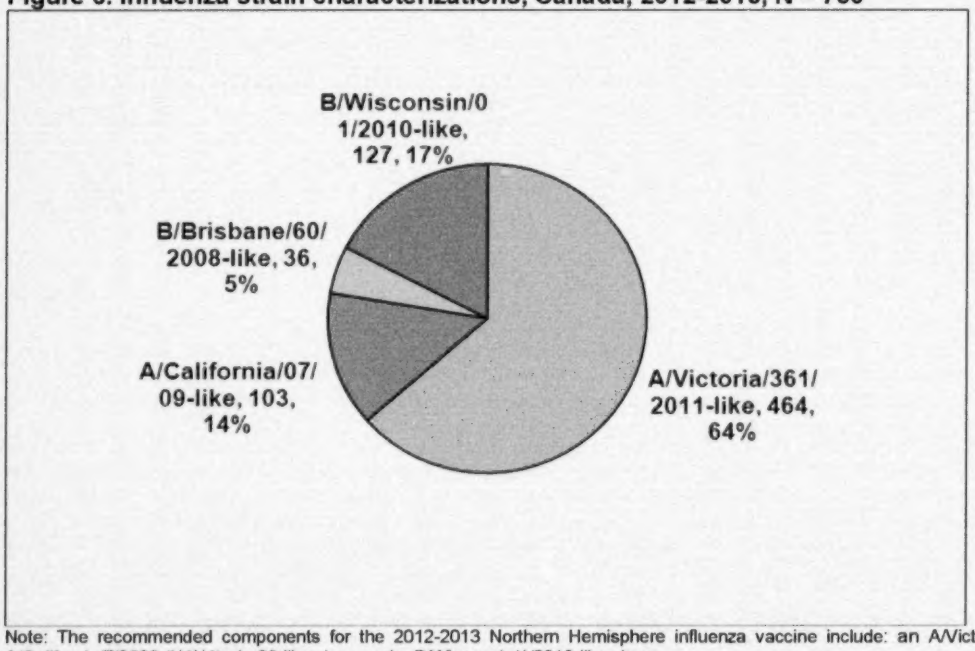
Figure 5. Percent positive influenza tests, compared to other respiratory viruses, Canada, by reporting week, 2012-2013



Influenza Strain Characterizations

During the 2012-13 season, the National Microbiology Laboratory (NML) has antigenically characterized 730 influenza viruses. The 464 influenza A(H3N2) viruses were antigenically similar to the vaccine strain A/Victoria/361/2011 and the 103 A(H1N1)pdm09 viruses were antigenically similar to the vaccine strain A/California/07/09. Among the influenza B viruses, 127 were antigenically similar to the vaccine strain B/Wisconsin/01/2010 (Yamagata lineage) and 36 were similar to B/Brisbane/60/2008 (Victoria lineage; component of the 2011-2012 seasonal influenza vaccine) (Figure 6).

Figure 6. Influenza strain characterizations, Canada, 2012-2013, N = 730



Note: The recommended components for the 2012-2013 Northern Hemisphere influenza vaccine include: an A/Victoria/361/2011 (H3N2)-like virus; an A/California/7/2009 (H1N1)pdm09-like virus; and a B/Wisconsin/1/2010-like virus.

Antiviral Resistance

During the 2012-13 season, NML has tested 699 influenza viruses for resistance to oseltamivir, and 696 influenza viruses for resistance to zanamivir. All viruses tested were sensitive to oseltamivir and zanamivir. A total of 859 influenza A viruses were tested for amantadine resistance and all were resistant (Table 3).

Table 3. Antiviral resistance by influenza virus type and subtype, Canada, 2012-2013

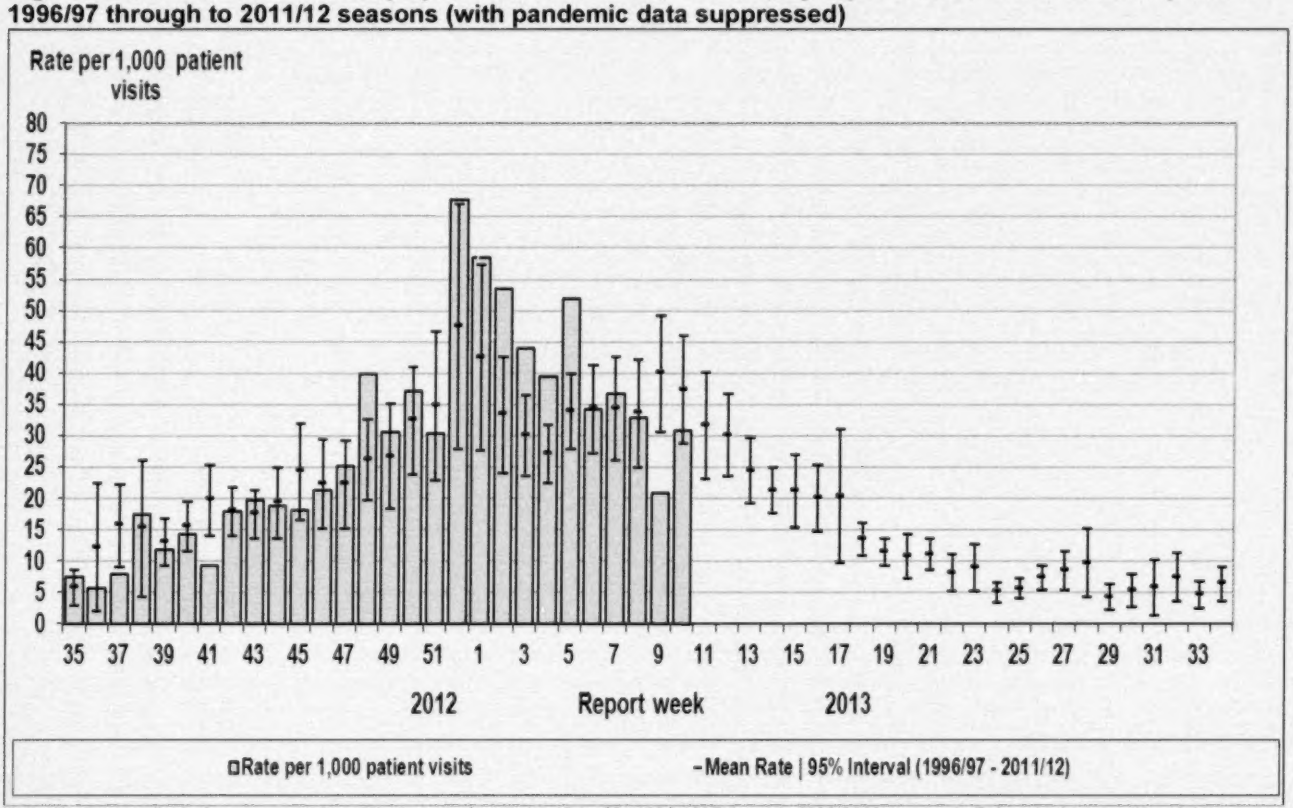
Virus type and subtype	Oseltamivir		Zanamivir		Amantadine	
	# tested	# resistant (%)	# tested	# resistant (%)	# tested	# resistant (%)
A (H3N2)	460	0	459	0	756	756 (100%)
A (H1N1)	94	0	92	0	103	103
B	145	0	145	0	NA*	NA*
TOTAL	699	0	696	0	859	859 (100%)

* NA – not applicable

Influenza-like Illness Consultation Rate

The national influenza-like-illness (ILI) consultation rate increased from 20.9 ILI consultations per 1,000 patient visits in week 09 to 30.7 in week 10 and is within the expected range for week 10 (Figure 7). In week 10, the highest consultation rate was observed in children 5-19 years of age (70.1/1,000).

Figure 7. Influenza-like illness (ILI) consultation rates, Canada, by report week, 2012-2013 compared to 1996/97 through to 2011/12 seasons (with pandemic data suppressed)



Note: No data available for mean rate in previous years for weeks 19 to 39 (1996-1997 through 2002-2003 seasons). Delays in the reporting of data may cause data to change retrospectively.

Pharmacy Surveillance

The Canadian antiviral prescription rate decreased slightly from 111.1 antiviral prescriptions per 100,000 new prescriptions dispensed in week 09 to 85.7/100,000 in week 10. The antiviral prescription rate was stable for children and decreased among all other age-groups. The highest rate continued to be observed for seniors ≥65 years of age, which decreased in week 10 to 289.0/100,000.

Note: Pharmacy sales data are provided to the Public Health Agency of Canada by Rx Canada Inc. and sourced from major retail drug chains representing over 3,000 stores nationwide (excluding Nunavut) in 85% of Health Regions. Data provided include the number of new antiviral prescriptions (for Tamiflu and Relenza) and the total number of new prescriptions dispensed by Province/Territory and age group.

Severe Respiratory Illness Surveillance

Paediatric Influenza Hospitalizations and Deaths (IMPACT)

In week 10, 20 new laboratory-confirmed influenza-associated paediatric (≤16 years of age) hospitalizations were reported by the Immunization Monitoring Program Active (IMPACT) network, compared to 43 in week 09. Among the cases reported in week 10, 75% (15) were identified with influenza B and 25% (5) with influenza A(unsubtyped). For the second week in a row, the number of influenza B cases exceeded the number of influenza A cases, a reversal of the pattern seen earlier in the season. The age distribution is as follows: 4 cases (20.0%) under 6 months of age, 3 (15.0%) between 6-23 months, 6 (30.0%) 2-4 years of age, 5 (25.0%) 5-9 years of age, and 2 (10.0%) 10-16 years of age. Two ICU admissions were reported during week 10, one 6-23 months of age, one between 2-4 years of age, both with influenza B.

Since the start of the 2012-13 season, a total of 694 influenza-associated paediatric hospitalizations have been reported by the IMPACT network: 601 (86.6%) with influenza A [of which 67 (11.1%) were A(H3N2), 16 (2.7%) were A(H1N1)pdm09 and the remaining 518 were A(unsubtyped)], and 93 (13.4%) with influenza B. The distribution of cases by age group is as follows: 139 (20.0%) <6 months of age; 160 (23.1%) age 6-23 months; 206 (29.7%) age 2-4 years; 130 (18.7%) age 5-9 years; and 59 (8.5%) age 10-16 years. Sixty of the 694 cases (8.6%) were admitted to the ICU. No deaths have been reported to date.

Note: The number of hospitalizations reported through IMPACT represents a subset of all influenza-associated paediatric hospitalizations in Canada. Delays in the reporting of data may cause data to change retrospectively.

Adult Influenza Hospitalizations and Deaths (PCIRN)

In week 10, 21 new laboratory-confirmed influenza-associated adult (≥16 years of age) hospitalizations were reported by the PHAC/CIHR Influenza Research Network (PCIRN) Serious Outcomes Surveillance (SOS) network. Seventy-six percent of the hospitalizations were among cases identified with influenza A(unsubtyped) and the rest were with influenza B. Ten cases were ≥65 years of age, seven were 45-64 years of age, and four were 20-44 years of age. Three ICU admissions were reported during the current week all with influenza A(unsubtyped): one case was 20-44 years of age and the two others ≥65 years of age. Two deaths were reported, both were ≥65 years of age, one with influenza A(H3N2) and influenza A(unsubtyped).

From week 45 to week 10, 1,474 influenza-associated adult hospitalizations have been reported by the PCIRN-SOS network: 1,382 (93.8%) with influenza A [of which 198 were A(H3N2), 11 were A(H1N1)pdm09, and 1173 were A(unsubtyped). Forty-six hospitalizations were among cases with influenza B, and the type has not been reported for 46 cases. The age distribution of hospitalizations is as follows: 1014 cases (68.9%) were aged ≥65 years, 293 cases (19.9%) were aged 45-64 years, 157 cases (10.7%) were aged 20-44 years, and 8 cases (0.5%) were <20 years of age. There have been 146 (9.9%) hospitalizations for which admission to the ICU was required: the majority (61.0%) were adults ≥65 years of age. Of the ICU admissions, 51 (34.9%) had at least one co-morbidity, two (1.4%) had no co-morbidities, and 93 had no information to date. A total of 77 deaths have been reported: 74 (96.0%) with influenza A [13 (17.6%) with influenza A(H3N2), one (1.4%) with influenza A(H1N1)pdm09 and 60 (81.1%) with influenza A(unsubtyped)], and 2 (2.6%) with influenza B, and one with influenza for which the type has not been reported. Sixty-four of the 77 deaths (83.1%) were in adults ≥65 years of age, 9 (14.3%) were adults 45-64 years of age, and 2 (2.6%) was 20-44 years of age. Thirty-three deaths (42.9%) occurred in individuals who had at least one co-morbidity. Detailed clinical information on co-morbidities is not known for the remaining cases.

Note: The number of hospitalizations reported through PCIRN represents a subset of all influenza-associated adult hospitalizations in Canada. Delays in the reporting of data may cause data to change retrospectively.

Provincial/Territorial Influenza Hospitalizations and Deaths (Aggregate Surveillance System)

In week 10, 108 laboratory-confirmed influenza-associated hospitalizations were reported from participating provinces and territories*. The majority of cases were influenza A (88; 81.5%), predominantly A(H3). The highest proportion of hospitalisations continued to be adults ≥65 years of age (54.6%). Of the 25 cases with available data, 7 were admitted to the ICU - all adults ≥ 20 years and older. Fifteen deaths were reported: 12 were adults ≥65 years of age, 1 aged 45-64 years and 2 aged 20-44 years. It is important to note that the cause of death does not have to be attributable to

influenza, a positive laboratory test is sufficient for reporting. Detailed clinical information (e.g. underlying medical conditions) is not known for these cases. Data was not received for the Northwest Territories in week 10.

To date this season 3,849 influenza-associated hospitalizations have been reported; compared to 281 hospitalizations reported for the same time period during the 2011-2012 influenza season. Of the hospitalizations to date, 95.7% have been influenza A. The cumulative proportion of hospitalizations in cases with influenza B has increased from 1.6% in week 01, to 4.2% in week 10; which follows the trend of influenza B detections in Canada this season. Age information was available for 3,846 cases, and the age distribution is as follows: 2,152 (56.0%) were ≥65 years; 645 (16.8%) 45-64 years; 342 (8.9%) 20-44 years; 37 (1.0%) 15-19; 145 (3.8%) 5-14 years and 525 (13.7%) 0-4 years of age. Among the 1,015 cases with available data, there have been 160 (15.8%) hospitalisations for which admission to ICU was required; the highest proportions being adults aged 45-64 years of age and ≥65 years of age (36.9% and 35.6% respectively). To date, 269 deaths have been reported: 223 (82.9%) were adults ≥65 years of age, 29 (10.8%) were adults 45-64 years; 11 (4.1%) were adults 20-44 years, one child aged 5-14 years and 5 (1.9%) aged 0-4 years. It is important to note that the cause of death does not have to be attributable to influenza, a positive laboratory test is sufficient for reporting. Detailed clinical information (e.g. underlying medical conditions) is not known for these cases.

Note*: The number of new influenza-associated hospitalizations and deaths reported by the Aggregate Surveillance System each week may be overestimated, as it may include retrospective updates to data from Ontario for previous weeks. These data may also include cases reported by the IMPACT and PCIRN networks. Influenza-associated hospitalizations are not reported to PHAC by the following Provinces and Territory: BC, NU, QC, NS, and NB. Only hospitalizations that require intensive medical care are reported by Saskatchewan. ICU admissions are not reported in Ontario.

International Influenza Updates

WHO: No new influenza surveillance update has been published by WHO since 1 March 2013.
World Health Organization influenza update

United States: During week 10, influenza activity remained high, but decreased in most areas. Eight states reported widespread influenza activity, Puerto Rico and 19 states reported regional influenza activity, and the District of Columbia and 17 states reported local activity. The national percentage of outpatient visits for ILI was 2.6% which is slightly above the national baseline of 2.2%, a slight increase after a steady decline over the previous 6 weeks. Six of 10 regions reported ILI at or above region-specific baseline levels; however the highest level of ILI activity was moderate, reported by five states and New York City in week 10. The percentage of deaths due to pneumonia and influenza has been above the epidemic threshold since week 01; in week 10 it was 7.6%. The proportion of tests positive for influenza viruses declined to 14.3% in week 10. The number of influenza B detections has been relatively stable over recent weeks, despite a decline in the total number of specimens positive for influenza. Of the positive influenza detections in week 10, 64.4% were positive for influenza B viruses. Of the 134 influenza A viruses for which subtype information was available, 79.1% were A(H3). Since October 1, 2012, the CDC has antigenically characterized 1,616 influenza viruses. Among influenza A(H3N2) viruses, 1,008 (99.6%) were A/Victoria/361/2011-like, and 4 (0.4%) showed reduced titers to A/Victoria/361/2011 antiserum. Among influenza A(H1N1)pdm09 viruses, 138 (97.9%) were A/California/7/2009-like, and 3 (2.1%) showed reduced titers to A/California/7/2009-like antiserum. Among influenza B viruses, 334 (72.1%) were B/Wisconsin/01/2010-like belonging to the Yamagata lineage of viruses; and 129 (27.9%) to the B/Victoria lineage. Two (0.5%) A(H1N1)pdm09 and one (0.1%) A(H3N2) oseltamivir-resistant viruses have been reported to date this season. Among the 11,043 influenza-associated hospitalizations reported to date this season, 83.8% were associated with influenza A of which 96.8% were A(H3N2), and 51% were among adults ≥65 years. A total of 99 influenza-associated paediatric deaths have been reported to date this season, 51 with influenza A, 47 with influenza B and one with both influenza A and B.
Centers for Disease Control and Prevention seasonal influenza report

Europe: In week 10, ILI and acute respiratory illness consultation rates declined in most parts of the region. Since the beginning of the season, 66% of detections from sentinel and non-sentinel sources were influenza A [71% A(H1N1)pdm09 and 29% A(H3N2)] and 34% were influenza B. The proportion of influenza B has been increasing, from 24% in week 03 to 39% week 10, mainly in countries in the southern and central parts of the region. A(H1N1)pdm09 continues to be the predominant strain in the region overall. Influenza A is predominant in eastern and central Europe as well as in Ireland and the United Kingdom, while influenza B is reported as predominant in some countries of the southern and central parts of the region as well as Denmark and Norway. Among the 324 A(H1N1)pdm09 viruses tested for resistance to oseltamivir, 8 were found to contain the H275Y mutation: three were specimens from hospitalized and outpatients not exposed to oseltamivir, while the other five viruses were detected in hospitalized immunocompromised patients receiving oseltamivir treatment. The number of hospitalizations for severe acute respiratory illness and hospitalizations for influenza are decreasing.
EuroFlu weekly electronic bulletin

Emerging Respiratory Pathogens

Human Avian Influenza
The latest WHO report of Influenza at the Human-Animal Interface was published on 12 March 2013. Two new fatal human cases of A(H5N1) avian influenza were reported in Cambodia, bringing the total number of cases reported from Cambodia in 2013 to 9, including 8 deaths. The cases occurred in five provinces in southern Cambodia and do not appear to be epidemiologically linked. The clade 1.1 viruses identified among these cases are similar to those detected in poultry in the region, and most cases had contact with sick poultry. Investigation of these cases supports infection due to exposure to infected poultry or contaminated environments, rather than human-to-human transmission.
WHO Influenza at the human-animal interface

Human Swine Influenza
No new human cases of infection with swine influenza viruses or variants were reported in week 10.
Centers for Disease Control and Prevention seasonal influenza report

Novel Coronavirus
Since April 2012, 15 cases of the novel coronavirus (nCoV) have been confirmed in four countries (United Kingdom, Jordan, Qatar, Kingdom of Saudi Arabia). Among the 15 cases, 9 have been fatal. The most recent case was reported in Saudi Arabia on March 12 in a 39-year-old male who developed symptoms on 24 February, was admitted to hospital on 28 February and died on 2 March 2013.

Cases of nCoV have generally presented with pneumonia, though a number have also had renal failure. Limited transmission between family members was observed in the most recent cases in the United Kingdom; however, as of March 13, 2013 no sustained person-to-person transmission has been identified. Three clusters of cases have been observed: one in a family in the United Kingdom, one in a family in Saudi Arabia and one among health workers in a hospital in Jordan. Although the cases from the United Kingdom suggest that the virus can spread between humans, the risk is considered to be very low.

On January 22, 2013, Public Health Agency of Canada issued Biosafety Advisory: Human Coronavirus Erasmus Medical Centre (HCoV-EMC/2012), which provides guidelines for handling clinical material which is known or suspected to contain nCoV.

More information can be found on the World Health Organization's website at: Coronavirus Infections

FluWatch reports include data and information from the following sources: laboratory reports of positive influenza tests in Canada (National Microbiology Laboratory), sentinel physician reporting of influenza-like illness (ILI), provincial/territorial assessment of influenza activity based on various indicators, including laboratory surveillance, ILI reporting, and outbreaks, influenza-associated paediatric and adult hospitalizations, antiviral sales in Canada, and WHO and other international reports of influenza activity.

Abbreviations: Newfoundland/Labrador (NL), Prince Edward Island (PE), New Brunswick (NB), Nova Scotia (NS), Quebec (QC), Ontario (ON), Manitoba (MB), Saskatchewan (SK), Alberta (AB), British Columbia (BC), Yukon (YT), Northwest Territories (NT), Nunavut (NU).

ILI definition for the 2012-2013 season

ILI in the general population: Acute onset of respiratory illness with fever and cough and with one or more of the following - sore throat, arthralgia, myalgia, or prostration which is likely due to influenza. In children under 5, gastrointestinal symptoms may also be present. In patients under 5 or 65 and older, fever may not be prominent.

Definitions of ILI/Influenza outbreaks for the 2012-2013 season

Schools: Greater than 10% absenteeism (or absenteeism that is higher (e.g. >5-10%) than expected level as determined by school or public health authority) which is likely due to ILI. Note: it is recommended that ILI school outbreaks be laboratory confirmed at the beginning of influenza season as it may be the first indication of community transmission in an area.

Hospitals and residential institutions: two or more cases of ILI within a seven-day period, including at least one laboratory confirmed case. Institutional outbreaks should be reported within 24 hours of identification. Residential institutions include but not limited to long-term care facilities (LTCF) and prisons.

Workplace: Greater than 10% absenteeism on any day which is most likely due to ILI.

Other settings: two or more cases of ILI within a seven-day period, including at least one laboratory confirmed case; i.e. closed communities.

Influenza Activity Levels Definition for the 2012-2013 season

Influenza Regional Activity levels are defined as:

1 = No activity: no laboratory-confirmed influenza detections in the reporting week, however, sporadically occurring ILI may be reported

2 = Sporadic: sporadically occurring ILI and lab confirmed influenza detection(s) with **no outbreaks** detected within the influenza surveillance region†

3 = Localized: (1) evidence of increased ILI* and
(2) lab confirmed influenza detection(s) together with
(3) **outbreaks** in schools, hospitals, residential institutions and/or other types of facilities occurring in **less than 50% of the influenza surveillance region**†

4 = Widespread: (1) evidence of increased ILI* and
(2) lab confirmed influenza detection(s) together with
(3) **outbreaks** in schools, hospitals, residential institutions and/or other types of facilities occurring **in greater than or equal to 50% of the influenza surveillance region**†

Note: ILI data may be reported through sentinel physicians, emergency room visits or health line telephone calls.

* More than just sporadic as determined by the provincial/territorial epidemiologist.

† Influenza surveillance regions within the province or territory as defined by the provincial/territorial epidemiologist.

We would like to thank all the Fluwatch surveillance partners who are participating in this year's influenza surveillance program.

This report is available on the Public Health Agency website at the following address: http://www.phac-aspc.gc.ca/fluwatch/index.html. Ce rapport est disponible dans les deux langues officielles.